

**Amendment to the Claims**

1-59. (Cancelled)

60. (Original) A method in a computing system for controlling an electroplating process having multiple steps in an electroplating chamber having a plurality of electrodes, comprising:

for each electrode, determining the net plating charge delivered through the electrode during a first plating cycle to plate a first workpiece by summing the plating charges delivered through the electrode in each step of the process;

comparing a plating profile achieved in plating the first workpiece to a target plating profile to identify deviations between the achieved plating profile and the target plating profile;

determining new net plating charges for each electrode selected to reduce the identified deviations in a second workpiece;

for each new plating charge, distributing the new net plating charge across the steps of the process;

using the distributed new net plating charges to determine a current for each electrode for each step of the process; and

conducting a second plating cycle to plate a second workpiece, using the currents determined for each electrode for each step.

61. (Original) The method of claim 60 wherein the new net plating charges are distributed uniformly across all of the steps of the process.

62. (Original) The method of claim 60 wherein the new net plating charges are distributed across the steps of the process by distributing differences between the new net plating charge and the delivered net plating charge to a single step of the process.

63. (Original) The method of claim 60 wherein the distributing includes distributing the new net plating charges to each of two or more phases of a selected one of the steps of the process.

64. (Currently Amended) The method of ~~step~~claim 60, further comprising repeating the method to further reduce deviations between the achieved plating profile and the target plating profile.

65. (Currently Amended) The method of ~~step~~claim 60 wherein a sensitivity matrix is used to determine the new net plating charges.

66. (Currently Amended) The method of ~~step~~claim 60 wherein a different sensitivity matrix is used to determine a new net plating charge for each step of the process.

67-101. (Cancelled)

102. (New) A computer-readable medium whose contents cause a computing system to perform a method for controlling an electroplating process having multiple steps in an electroplating chamber having a plurality of electrodes, the method comprising:

for each electrode, determining the net plating charge delivered through the electrode during a first plating cycle to plate a first workpiece by summing the plating charges delivered through the electrode in each step of the process;

comparing a plating profile achieved in plating the first workpiece to a target plating profile to identify deviations between the achieved plating profile and the target plating profile;

determining new net plating charges for each electrode selected to reduce the identified deviations in a second workpiece;

for each new plating charge, distributing the new net plating charge across the steps of the process;

using the distributed new net plating charges to determine a current for each electrode for each step of the process; and

conducting a second plating cycle to plate a second workpiece, using the currents determined for each electrode for each step.

103. (New) The computer-readable medium of claim 102 wherein the new net plating charges are distributed uniformly across all of the steps of the process.

104. (New) The computer-readable medium of claim 102 wherein the new net plating charges are distributed across the steps of the process by distributing differences between the new net plating charge and the delivered net plating charge to a single step of the process.

105. (New) The computer-readable medium of claim 102 wherein the distributing includes distributing the new net plating charges to each of two or more phases of a selected one of the steps of the process.

106. (New) The computer-readable medium of claim 102, the method further comprising repeating the method to further reduce deviations between the achieved plating profile and the target plating profile.

107. (New) The computer-readable medium of claim 102 wherein a sensitivity matrix is used to determine the new net plating charges.

108. (New) The computer-readable medium of claim 102 wherein a different sensitivity matrix is used to determine a new net plating charge for each step of the process.

109. (New) A method in a computing system for controlling an electroplating process in an electroplating chamber having a plurality of electrodes, comprising:

for each electrode, determining the net plating charge delivered through the electrode during a first plating cycle to plate a first workpiece;

comparing a plating profile achieved in plating the first workpiece to a target plating profile to identify deviations between the achieved plating profile and the target plating profile;

determining new net plating charges for each electrode selected to reduce the identified deviations in a second workpiece;

using the determined new net plating charges to determine a current for each electrode for each step of the process; and

conducting a second plating cycle to plate a second workpiece, using the currents determined for each electrode.

110. (New) The method of claim 109, further comprising repeating the method to further reduce deviations between the achieved plating profile and the target plating profile.

111. (New) The method of claim 109 wherein a sensitivity matrix is used to determine the new net plating charges.

112. (New) The method of claim 109 wherein a different sensitivity matrix is used to determine a new net plating charge for each step of the process.

113. (New) A computer-readable medium whose contents cause a computing system to perform a method for controlling an electroplating process in an electroplating chamber having a plurality of electrodes, the method comprising:

for each electrode, determining the net plating charge delivered through the electrode during a first plating cycle to plate a first workpiece;

comparing a plating profile achieved in plating the first workpiece to a target plating profile to identify deviations between the achieved plating profile and the target plating profile;

determining new net plating charges for each electrode selected to reduce the identified deviations in a second workpiece;

using the determined new net plating charges to determine a current for each electrode for each step of the process; and

conducting a second plating cycle to plate a second workpiece, using the currents determined for each electrode.

114. (New) The computer-readable medium of claim 113, the method further comprising repeating the method to further reduce deviations between the achieved plating profile and the target plating profile.

115. (New) The computer-readable medium of claim 113 wherein a sensitivity matrix is used to determine the new net plating charges.

116. (New) The computer-readable medium of claim 113 wherein a different sensitivity matrix is used to determine a new net plating charge for each step of the process.